

Medication History Display and Evaluation

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The centerpiece of the poster will be the Vermont Medication Graphics Project, currently being developed at the Vermont State Hospital with support from the Robert Wood Johnson Foundation.

The primary purpose of Project Medgraph is to improve the quality of medical care by presenting medication history in a graphic format. This allows prescribing physicians to make decisions on changes in the patient's medication regimen which are fully informed by past history, facilitating the development of the optimum medication regimen.

The evolution of medication administration record keeping from the pre-computer era to the future will be dramatically illustrated. A large photo of our hospital, with its classic nineteenth century architecture, will suggest the past, where medication administration records were handwritten and summarized, sometimes incompletely on lists. Narratives in which attempts are made to correlate medication with patients' symptoms are also shown, and contrasted to the same information displayed graphically. This highlights the problem of the inaccessibility of the large amount of complex information, which we needed to solve, in order to make medication prescription as rigorously scientific as it should be.

With Project Medgraph we commissioned the development of software to create graphs to organize and display medication records. The graphs consist of a series of timelines, each displaying in bold colors the different medications of a certain category which an individual patient received. The graphs show the dose as a percent of the usual daily dose, rather than in milligrams. Thus, one can tell at a glance, by the height of the columns, whether the dose is relatively high or low at a given point. Target symptoms are also graphed

simultaneously, demonstrating medication effectiveness. These features make our graphs potentially useful to a much broader audience, including reviewers and the patients themselves.

For prescribing physicians, the graphs put the "big picture" in focus, which is so important when evaluating a medication regimen that spans years and involves multiple medications with significant cumulative toxicity. They can reveal clinical information about side effects that can be recognized clearly only in retrospect. For example, the graph below shows that multiple adverse events were strongly associated with a course of Nardil. This gives a more accurate picture of why this drug is now contra-indicated for this patient than we would have if we merely listed it as an "allergy".

Finally, the poster will depict the future evolution of the system, under a large photo of the earth as seen from outer space, suggesting the immense potential applicability of increased information accessibility through computerization. It will show the clinical graphs that could become available as soon as it becomes standard practice to record medication administration and clinical response directly into a computer database and our prototype software is upgraded to a state-of-the-art system.

The poster will also include imaginative spin-offs of the central concept of presenting medication administration graphically. For example, a computer display might give warning that the cumulative dose is in the range where there is increased risk of drug dependency or permanent harm such as the development of tardive dyskinesia. Spatial representations of huge volumes of data might reveal the causes of rare and deadly medication reactions.

